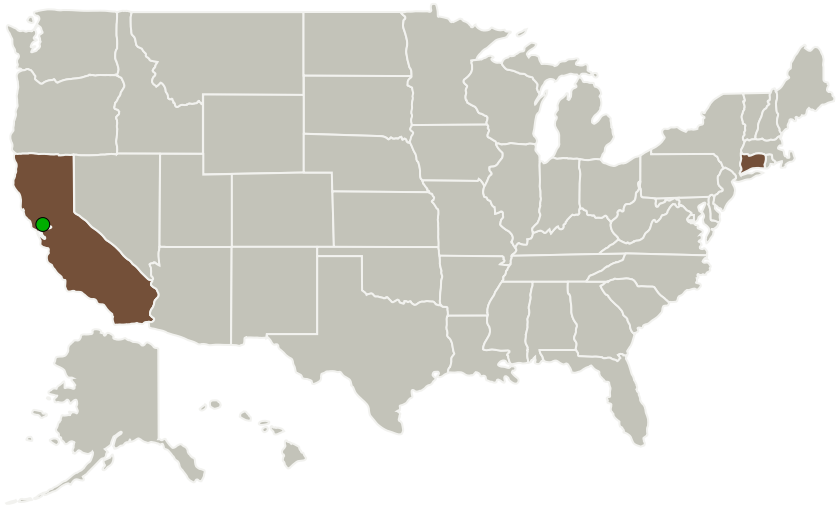
Automation for Vehicle and Crew Operations, Phase I

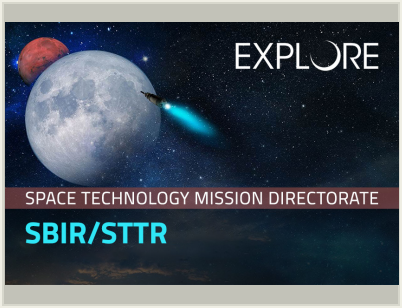
Completed Technology Project (2011 - 2011)

Project Introduction

Modern space systems such as the International Space Station (ISS) and the proposed Constellation vehicles and habitats are complex entities with hundreds of thousands of individual telemetry items. Monitoring the health of these systems, troubleshooting their faults, developing maintenance plan and schedule, and aiding to restore system functionality are key tasks that flight controllers must perform. The current suite of tools for assisting with these tasks is not tightly integrated with the telemetry stream, the commanding process or other tools that flight controllers use. In the proposed effort, Qualtech Systems Inc. in collaboration with TRACLabs Inc. will develop an advanced health monitoring, capability assessment, and opportunistic maintenance planning tool that tightly integrates with the future mission control telemetry stream and displays. Our tool will be a plug-in to the future Mission Control Technology display software that will be deployed over the next several years in NASA's Mission Control Center (MCC). As such it will share capabilities and features with all of the other MCT applications such as plotting, procedure execution, commanding and evaluators (comps). The benefit to NASA will be a fully integrated health monitoring, capability assessment, and maintenance planning tool that reduces flight controller workload by sharing information with other MCC applications. This tool will also be vital in enhancement of safety, mission success probability and freeing up crew and controller time that is currently dedicated towards performing unscheduled maintenance/repairs.

Primary U.S. Work Locations and Key Partners





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Organizations Performing Work	Role	Type	Location
Qualtech Systems, Inc.	Lead Organization	Industry Minority-Owned Business, Small Disadvantaged Business (SDB)	Rocky Hill, Connecticut
Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

Primary U.S. Work Locations	
California	Connecticut

Project Transitions

February 2011: Project Start

September 2011: Closed out

Closeout Summary: Automation for Vehicle and Crew Operations, Phase I Proj ect Image

Closeout Documentation:

- Final Summary Chart Image*(https://techport.nasa.gov/file/140233)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Qualtech Systems, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Sudipto Ghoshal

Co-Investigator:

Sudipto Ghoshal

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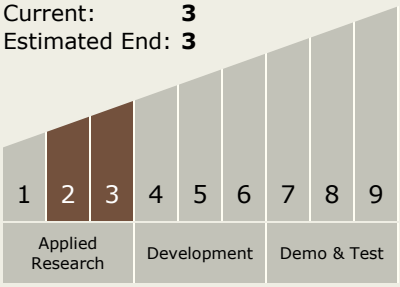
Technology Maturity (TRL)

Start: **2**
Current: **3**
Estimated End: **3**



Technology Areas

Primary:

- TX10 Autonomous Systems
  - TX10.2 Reasoning and Acting
    - TX10.2.4 Execution and Control

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System